

Application Serial No. 10/820,555
Reply to Office Action of July 27, 2007

PATENT
Docket: CU-4420

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Amendments To The Claims

The listing of claims presented below will replace all prior versions, and listings, of claims in the application.

Listing of claims:

1. (Currently amended) A method of simulating on a computer by the execution of program instructions and displaying on a display device, a visual simulation of an actual track route, the method comprised of the steps of:

specifying to the computer, a track event along an actual track route;
reading, from a memory device coupled to the computer, a track event database by the computer to obtain a software model of a section of track and a software model of at least one the track event along the actual track route such that when said program instructions are executed by the computer, the software model of the section of track and the software model of the at least one by which track event can be simulated on the computer present a visual simulation of the section of track and a visual simulation of the at least one track event on a visual display device coupled to the computer; and
the computer presenting a simulation of the track event on a display device using the software model of the track event;
wherein images presented on said display device by said computer, replicate what an engineer in a train locomotive would see as a locomotive moves along a section of track for which a software model of the track section and a software model for said track event were read from said memory device.

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2. (Currently amended) The method of claim 1 wherein the step of specifying a track event along an actual train route includes the step of specifying the location of the track event by the latitude and longitude of the track event.
3. (Currently amended) The method of claim 2 further including the step of:
specifying providing to the computer in a memory device, a terrain database from which to read terrain information for the terrain proximate to the track event;
reading terrain information for the track event from the terrain database;
reading a terrain model database to obtain a software model of the terrain proximate to the track event by which the a visual image of a simulation of the terrain can be simulated on the computer; and
said computer presenting a simulation of the terrain proximate to the track event.
4. (Original) The method of claim 1 further including the step of: storing the software model of the track event in a simulation file.
5. (Original) The method of claim 1 further including the steps of:
reading a surface coverage database from which to obtain information on the surface coverage of terrain surrounding the track event;
reading a surface coverage simulation database to obtain a software model of the surface coverage surrounding the track event and by which the surface coverage surrounding the track event can be simulated on the computer; and

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the computer generating a simulation of the surface coverage surrounding the track event.

6. (Original) The method of claim 3 wherein the information input to said computer from the terrain database includes information from a U.S. Geological Survey database.
7. (Original) The method of claim 2 wherein said actual location includes the latitude and longitude coordinates of track events.
8. (Previously presented) The method of claim 3 wherein the proximate terrain information includes the elevation of the location of the first track event, and climatic information for the location of the first track event.
9. (Cancelled)
10. (Original) The method of claim 1 wherein said first track event includes at least one of:
 - a section of straight track;
 - a track switch;
 - a train signal or sign;
 - a track crossing;
 - a track curve;
 - a track grade;
 - a bridge;
 - a platform;
 - a tunnel;

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an over-head power transmission.

11. (Currently amended) A method of displaying on a computer, visual images that simulate what a person in a train locomotive would see from the locomotive as it moves along ~~simulating on a computer~~ an actual track route, the visual images being generated by the execution of computer program instructions, the method comprised of the steps of:

specifying to the computer, a track event along an actual track route; ~~to the computer;~~

specifying the actual location of the track event;

reading, from a memory device, a model for the track event from a track event model database ~~by the computer~~ to obtain there from, a software model of the track event by which a visual simulation of the track event can be generated ~~by simulated on the computer~~; and

when said computer program instructions are executed by the computer, the computer generates ~~generating~~ a visual simulation of a section of the actual track route and a visual simulation of the track event on a visual display device, using the software model of the track event;

the display of the visual simulation of the track event including a visual simulation of the actual terrain proximate to the track event, said display of the visual simulation of the actual terrain along the actual track route.

12. (Original) The method of claim 11 further including the step of:

storing the software model of the track event in a simulation file.

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13. (Original) The method of claim 11 further including the steps of:
- the computer obtaining surface coverage information for terrain proximate to the track event;
 - the computer obtaining a software model for terrain proximate to the track event; and
 - the computer generating a simulation of the surface coverage proximate the track event.
14. (Original) The method of claim 11 wherein said actual location includes the latitude and longitude of the track event.
15. (Original) The method of claim 11 wherein the proximate terrain information includes the elevation of the location of the first track event.
16. (Original) The method of claim 11 wherein said proximate terrain information includes climatic information for the location of said first track event.
17. (Original) The method of claim 1 wherein the track event includes at least one of:
- a section of straight track;
 - a track switch;
 - a train signal;
 - a track crossing;
 - a track curve;
 - a track grade;
 - a bridge;
 - a platform;

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a tunnel;

an over-head power transmission.

18. (Currently amended) A method of simulating in a computer, by the execution of program instructions therein, the operation of a train along a track route, the method comprised of the steps of:

identifying the starting and ending points of an actual track route to be simulated;

specifying to the computer, the location and the identity of a track event between the starting and ending points of the track route;

reading a track event database from a memory device by the computer to obtain there from, a software model of the track event by which the track event can be visually simulated on the computer on a visual display device by the execution of said computer program instructions and the use of said software model of the track event;

said computer obtaining from a terrain database, information about the terrain surrounding the track event; and

said computer presenting on a display device that is coupled to said computer, a visual simulation of the track event, using the software model of the track event and a visual simulation of the terrain, using the information about the terrain surrounding the track event, -information-.

19. (Original) The method of claim 18 further including the steps of:

inputting to the computer, parameters of a train to traverse said track

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route; and

said computer presenting on a display device, a simulation of the train encountering the track event.

20. (Original) The method of claim 18 further comprised of the step of:
simulating the train's response to the terrain surrounding said track event.
21. (Original) The method of claim 19 further including the step of:
the computer reading a simulation of the surface coverage of terrain proximate to the first track event.
22. (Original) The method of claim 18 wherein the information input to said computer from said first database includes information from a U.S. Geological Survey database.
23. (Original) The method of claim 18 wherein said actual location includes the latitude and longitude coordinates of track events.
24. (Original) The method of claim 18 wherein said first track event includes at least one of:
a section of straight track;
a track switch;
a train signal;
a track curve;
a track grade;
a bridge;
a platform;

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a tunnel;

an over-head power transmission.

25. (Currently amended) A method of simulating on a computer by the execution of program instructions thereon, the operation of a train along an actual track route comprised of the steps of:

inputting to the computer, the latitude and longitude coordinates and the identity of a track event along the actual track route;

said computer obtaining from a storage device a software model of the track event;

storing in a storage device, the software model of the track event in a simulation file;

said computer executing program instructions, which use the software model of the track event from the simulation file; and

the computer displaying a three-dimensional visual simulation of the track event and a section of an actual track route, on a visual display device.

26. (Currently amended) A method of simulating on a computer by the execution of program instructions thereon, the operation of a train along an actual track route comprised of the steps of:

executing program instructions, which when executed cause the computer to:

receive ~~inputting to said computer~~, the location and identity of a track event along said track route;

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obtain from a memory device ~~obtaining~~ a software simulation of the track event from a track event simulation database;

obtain from a memory device, ~~obtaining~~ terrain information for the location of the track event from a terrain database;

obtain from a memory device ~~obtaining~~ local land coverage information for the location of the track event from surface coverage database;

obtain from a memory device ~~obtaining~~ a software simulation of the surface coverage surrounding the track event;

store in a memory device ~~storing~~ the software simulation of the track event in a simulation file;

store in a memory device ~~storing~~ the software simulation of the surface coverage in the simulation file;

display ~~displaying~~ on a visual display device, a visual simulation of the track event using the software simulation of the track event ~~stored~~ in the simulation file;

display ~~displaying~~ on a visual display device, a visual simulation of the terrain around the track event using the software simulation of the surface coverage in the simulation file.

27. (Currently amended) A method of simulating on a computer, the operation of a train along an actual track route by the execution of program instructions on said computer, the method comprised of the steps of:

inputting to said computer, the location and description of a plurality of

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track events along said track route;

obtaining from a track event model database stored in a memory device, a software model for each track event;

storing in a simulation file in a memory device, a software model for each track event along the track route; ~~in a simulation file;~~

executing program instructions by said computer which result in said computer:

displaying on a visual display device, ~~the~~ visual simulations of the track events along the track route using the software models of track events stored in the simulation file.

28. (Currently amended) A method of simulating on a computer by the execution of program instructions on said computer, the operation of a train along an actual track route comprised of the steps of:

inputting to said computer, the location and description of a plurality of track events along said track route;

obtaining from a track event model database stored in a memory device, a software model for each track event;

obtaining from a terrain database stored in a memory device, terrain information for each track event along the track route;

storing in a memory device, a software model for each track event along the track route in a simulation file;

storing in a memory device, the terrain information for each track event in

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the simulation file;

executing program instructions by said computer which result in said computer;

displaying on a visual display device, [[the]] visual simulations of the track events along the track route using the software models of track events stored in the simulation file and using the terrain information stored in the simulation file to present on the visual display device, visual simulations of the visual appearance of terrain around the track event.

29. (Withdrawn) A system for displaying the operation of a train along an actual track route comprised of:

a processor;

a display device operatively coupled to the processor;

an input/output device operatively coupled to the processor, through which at least track events along an actual train track can be specified to the processor;

a storage device, operatively coupled to said processor, said storage device storing computer program instructions and data, which when executed, cause the processor to present on the display device, a simulation of the track event along an actual train route using a software model of the track event that is stored in a memory device that is operatively coupled to the processor.

30. (Withdrawn) The system of claim 30 wherein the storage device stores instructions which when executed cause the processor to present on the display device, a simulation of track events using terrain data for terrain that is proximate

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to the track event.

31. (Withdrawn) A system for displaying the operation of a train along an actual track route comprised of:

a processor;

a display device operatively coupled to the processor;

an input/output device operatively coupled to the processor, through which track events along an actual train track can be specified to the processor by their type and actual location; a storage device, operatively coupled to said processor, said storage device storing computer program instructions and data, which when executed, cause the processor to: store software simulations of track events in a simulation file;

read software simulations stored in the simulation file and sequentially present on the display device, a simulation of a track event along an actual train route using a software model of the track event that is stored in the simulation file.